

Serial No.: 10/711,786
Confirmation No.: 5785
Applicant: HENRIKSON, Per
Atty. Ref.: 7589.204.PCUS00

AMENDMENTS TO THE CLAIMS:

Please cancel claims 1-16, add new claims 37-55 and amend the claims as indicated hereinbelow:

1-16 (cancelled)

17. (Currently Amended) An arrangement (1) for controlling a welding operation, said arrangement comprising:

a device (2) for monitoring a welding area of an object (14) in connection with welding, said device comprising: means for reproducing (3) the welding area; at least one filter (4) arranged in front of or in the reproduction means (3); means for illuminating (5) the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength; and said filter (4) comprising a band-pass filter configured for filtering around ~~a wavelength within the predetermined~~ ultraviolet wavelength range;

means (9) for processing an image produced by the reproduction means (3); and
means (10) for controlling one of: at least one welding parameter and the position of the welding head (11) of the welding means (7) on the basis of information from the image.

18. (Original) The arrangement as recited in claim 17, wherein said image-processing means (9) is adapted to measure the weld width from the image.

19. (Original) The arrangement as recited in claim 17, wherein said image-processing means (9) is adapted to detect at least one of: the position of the welding joint, a gap between two parts to be welded together, and the geometry of the melt.

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20. (Currently Amended) A method for monitoring a welding area of an object (14) in connection with a welding process, said method comprising:

illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength;

reproducing the welding area; and

filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band-pass filter (4) around ~~a wavelength within the predetermined ultraviolet wavelength range.~~

21. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength lies within a wavelength range of 280-450 nm.

22. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength is shorter than 400 nm.

23. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength is shorter than 380 nm.

24. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength is longer than 300 nm.

25. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength is approximately 365 nm.

26. (Currently Amended) The method as recited in claim 20, wherein said predetermined wavelength is approximately 320 nm.

27. (Original) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 90 nm FWHM around said wavelength.

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28. (Original) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 70 nm FWHM around said wavelength.
29. (Original) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than 30 nm FWHM around said wavelength.
30. (Original) The method as recited in claim 20, wherein said band-pass filter (4) is adapted for filtering within a range which is approximately 10 nm FWHM.
31. (Original) The method as recited in claim 20, further comprising:
 - processing an image produced by the reproduction means (3); and
 - controlling at least one of welding parameters and the position of a welding head (11) based on information processed from the image.
32. (Original) The method as recited in claim 31, wherein the width of the welding joint reproduced is measured, and said welding parameters and position of the welding head (11) are controlled on the basis of the measured weld width.
33. (Original) The method as recited in claim 32, wherein the measured weld width is compared with one or more reference values, and, in the event of deviation from an approved range being detected, said welding parameters and position of the welding head (11) are regulated.
34. (Original) The method as recited in claim 31, wherein the position of the welding joint and a gap between two parts to be welded together and the geometry of the melt are detected, and said welding parameters and position of the welding head are controlled on the basis of this information.

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35. (Currently Amended) A computer program comprising computer program segments that implement a method, when the program is run on a computer, for monitoring a welding area of an object (14) in connection with a welding process, said method comprising: illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength; reproducing the welding area; and filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band-pass filter (4) around a ~~wavelength within the~~ predetermined ultraviolet wavelength range.

36. (Currently Amended) A computer program product comprising computer program segments stored on a computer-readable means that implement a method, when the program is run on a computer, for monitoring a welding area of an object (14) in connection with a welding process, said method comprising: illuminating the welding area with ultraviolet radiation of a predetermined ultraviolet wavelength; reproducing the welding area; and filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band-pass filter (4) around a ~~wavelength within the~~ predetermined ultraviolet wavelength range.

37. (New) A device (2) for monitoring a welding area of an object (14) in connection with welding, said device comprising:

means for illuminating (5) the welding area with ultraviolet radiation;
means for reproducing (3) the welding area; and
at least one filter (4) arranged in front of or in the reproduction means (3), said filter (4) comprising a band-pass filter configured for filtering around a wavelength within the ultraviolet wavelength range.

38. (New) The device as recited in claim 39, wherein said illumination means illuminates the welding area with ultraviolet radiation at a predetermined ultraviolet wavelength and said band-pass filter filters light around the predetermined ultraviolet wavelength, said predetermined ultraviolet wavelength thereby characterizing a wavelength of the band-pass filter.

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39. (New) The device as recited in claim 38, further comprising said illumination means illuminating the welding area with ultraviolet radiation across a predetermined ultraviolet wavelength range that includes said predetermined ultraviolet wavelength.
40. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is centered with respect to the predetermined ultraviolet wavelength at which the illumination means emits rays.
41. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter lies within a wavelength range of 280-450 nm.
42. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is shorter than 400 nm.
43. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is shorter than 380 nm.
44. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is longer than 300 nm.
45. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is approximately 365 nm.
46. (New) The device as recited in claim 39, wherein the wavelength of the band-pass filter is approximately 320 nm.

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47. (New) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 90 nm FWHM around said predetermined ultraviolet wavelength.

48. (New) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 70 nm FWHM around said predetermined ultraviolet wavelength.

49. (New) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 30 nm FWHM around said predetermined ultraviolet wavelength.

50. (New) The device as recited in claim 39, wherein the band-pass filter is adapted for filtering a wavelength range that is smaller than 10 nm FWHM around said predetermined ultraviolet wavelength.

51. (New) The device as recited in claim 39, wherein said reproduction means (3) comprises a camera.

52. (New) The device as recited in claim 51, wherein said device further comprises a diaphragm (16) arranged in front of the camera.

53. (New) The device as recited in claim 51, wherein said device comprises an attenuating filter.

54. (New) The device as recited in claim 53, wherein said diaphragm (16) has a relatively small aperture means (9) for processing an image produced by the camera (3), which aperture means (9) comprises a central processing unit (CPU) or computer.

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55. (New) A device (2) for monitoring a welding area of an object (14) in connection with welding, said device comprising:

means for reproducing (3) the welding area;
at least one filter (4) arranged in front of or in the reproduction means (3);
means for illuminating (5) the welding area with ultraviolet radiation; and
said filter (4) comprising a band-pass filter configured for filtering around a wavelength within the ultraviolet wavelength range, and wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than at least one of the following: (a) 90 nm FWHM around said filter wavelength, (b) 70 nm FWHM around said filter wavelength, (c) 30 nm FWHM around said filter wavelength, and (d) 10 nm FWHM around said filter wavelength.

56. (New) A method for monitoring a welding area of an object (14) in connection with a welding process, said method comprising:

illuminating the welding area with ultraviolet radiation;
reproducing the welding area; and
filtering radiation from the welding area in a direction toward a means (3) for said reproduction, said filtering being carried out using a band-pass filter (4) around a wavelength within the ultraviolet wavelength range, and wherein said band-pass filter (4) is adapted for filtering within a range which is smaller than at least one of the following: (a) 90 nm FWHM around said filter wavelength, (b) 70 nm FWHM around said filter wavelength, (c) 30 nm FWHM around said filter wavelength, and (d) 10 nm FWHM around said filter wavelength.